Research Articles

Using the NCHEC Areas of Responsibility to Assess Service Learning Outcomes in Undergraduate Health Education Students

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ABSTRACT

This study used the areas of responsibility developed by the National Commission for Health Education Credentialing (NCHEC) as a framework for the assessment of Service Learning experiences of undergraduate health education students. In the present study, six Service Learning projects involving 12 students were evaluated using multiple strategies, including (1) students' written reflections, (2) a survey, and (3) annotated portfolios. Written reflections focused on students' impact on the target population, progress during the project, and development of skills associated with the areas of responsibility. The survey assessed students' perceptions regarding their development of competency, and annotated portfolios documented tangible evidence of students' work related to each of the seven areas of responsibility. Triangulation of these data sources demonstrated that students' written reflections and perceptions of their development of competency are solid indicators of how well they will be able to produce tangible evidence of their progress in the areas of responsibility. Therefore, assessment and reflection conducted early in the Service Learning experience and often throughout will provide essential information regarding the students' likelihood of producing documentation regarding their development of competency. The early assessment may allow for the modification of a project to increase its likelihood of developing the students' professional skills.

INTRODUCTION

As Service Learning has become more widely incorporated into health education curricula at the undergraduate level, the demand for high-quality assessment also has grown. Additionally, 90% professional preparation programs in health education are using the areas of responsibility for entry-level health educators developed by the National Commission for Health Education Credentialing[1] as a basis for their curricula.[2] This study combines these two concepts and uses the NCHEC areas of responsibility as a framework to assess Service Learning outcomes for undergraduate health education students.

Service Learning embodies many diverse characteristics. As defined by Eyler and Giles: "Service Learning is a form of experiential education where learning occurs through a cycle of action and reflection as students work with others through a process of applying what they are learning to community problems and, at the same time, reflecting upon their experience as they seek to achieve real objectives for the community and deeper understanding and skills for themselves."[3]

In Service Learning, the academic needs of the student are balanced with the ever-important needs of the community. The service provided by the student is carried out in response to the identification of key needs within the community as determined by a needs assessment. The partnership is designed to be equally beneficial to all par-

ties. Development of personal and civic responsibility is also integral to students engaged in Service Learning experiences. Citizenship skills such as critical thinking, problem solving, collaboration, and communication are essential within the context of the experience.[4]

It is a hallmark of all Service Learning experiences that students have opportunities to reflect on their community experiences by thinking and writing about them, and by discussing them with peers, faculty, and community members. This reflection

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process provides the students an opportunity to integrate what they have seen in the community, have heard in the classroom and experienced in their own lives.[3]

Overall, the incorporation of Service Learning into a health education curriculum allows faculty the opportunity to engage students in community-based learning, while diligently and closely assessing academic and professional development.

It is also important to differentiate Service Learning from community service, volunteerism, and internships. Community service and volunteerism are focused on the service provided to the community and the benefits received. Internships, on the other hand, are dedicated to the students' professional preparation. Service Learning has an equally weighted balance between the benefits to the community and the benefits to the students.[5] In addition, the reflection that is a cornerstone of Service Learning allows students to analyze the work in a way that is not present in either volunteer or internship experiences.

In a recent study by Reynolds, it was found that Service Learning and internships were complementary in meeting the clinical competencies for students studying Physical Therapy.[6] Service Learning and internships that are integrated into a student's curriculum seem to work in concert to develop students' professional skills.

PURPOSE

The intent of the present study was to develop an innovative approach for determining the effectiveness of Service Learning projects in developing students' competency in the seven areas of responsibility for entry-level health educators identified by NCHEC. This project was carried out within a Bachelor of Science degree in a Community Health Education at a mid-sized, urban university in the Northeast.

SIGNIFICANCE

Today's diverse communities face a broad set of public health challenges. Communities may or may not have access to public health resources to address these challenges. Community Health Education students need to learn about these complexities in their academic preparation if they are to, in fact, be prepared to address them as professionals. Their professional development is enhanced when their academic training provides them with community-based opportunities to learn about these challenges and resources. Service Learning is a way to engage students in the community, develop their professional skills, and expose them to the academic rigors of the discipline.

With the increasing use of Service Learning in higher education, generally, and health education, in particular, assessment of the development of professional skills resulting from Service Learning has grown ever more important. Currently, there is no published literature assessing the degree to which service learning experiences in health education prepares students in the NCHEC areas of responsibility. Greenberg,[7] in an article evaluating his capstone course entitled Service Learning in Health Education, acknowledges the importance of the areas of responsibility in the training of undergraduate health education students. He does not employ them, however, in the evaluation of the course or students' experiences with Service Learning. If the goal of faculty is to immerse students in a Service Learning project that allows them to develop competency in the seven areas of responsibility, it is advisable to frame the assessment of service learning experiences around these key areas. The present study describes an assessment strategy whereby the outcomes of a Service Learning experience are evaluated in conjunction with the NCHEC areas of responsibility.

SERVICE LEARNING IMPLEMENTATION

The study reported here was based on Service Learning activities required of 12 Health Education seniors in a three-credit course, Service Learning in Health Education. Six projects were designed to take place at five different community settings. One to three students participated at each project site. For each project, one person from the organization/agency was identified as the student's preceptor.

The selection of Service Learning sites requires an initial investment of time, but is critical and can determine whether students will have a positive experience.[8] In the present case, over a four month period of time prior to the start of the semester, each partnership and Service Learning project was carefully crafted to assure the needs of students and the community organizations would be met through the Service Learning project experience. Several critical issues were negotiated for each campus-community partnership. First, the researcher/instructor had to be certain that the Service Learning project met the goal of providing students with the opportunity to develop and practice as many of the responsibilities and competencies as possible. Second, it was essential for each community partner to come to the table with a strong sense of the population they served and of the most significant needs of that population. Last, it was a priority that the Service Learning students become involved in a project that would not require significant supervision by the agency preceptor. The researcher and community partners remained cognizant of these factors and worked conscientiously to negotiate mutually beneficial experiences.

Students were required to dedicate 40 hours toward achieving the objectives of their Service Learning projects. In addition, students participated in bimonthly seminar sessions designed to help them reflect on the Service Learning projects and associate the projects with the NCHEC areas of responsibility. Students were oriented to their assigned projects on the first day of class when preceptors came to campus to discuss the projects, expectations, and responsibilities with the students. Students then scheduled a time to go to the agency or organization for an orientation and to be introduced to the staff. Table 1 lists the projects and objectives associated with each.

METHODS

This study was designed as a process/impact evaluation of Service Learning projects,

Table 1. Summary of Service Learning Sites and Project Objectives

Service Learning Site	Objectives with corresponding Areas of Responsibility in parentheses
University Health Service (3 Students)	▪ Implement a survey regarding general campus satisfaction with the services provided by the Health Service. (I) ▪ Make recommendations on how to improve student satisfaction with the health service. (I) ▪ Plan, develop, implement and evaluate health education programs in campus residence halls, focused on the link between sleep deprivation, stress, and alcohol use. (II, III, IV)
After-school Program for Girls (3 Students)	▪ Consult child health literature to become familiar with health concerns affecting the target population. (I) ▪ Collaborate with staff to decide upon appropriate topics for programming. (II) ▪ Design, implement, and evaluate six weeks of health education programming for girls aged 6 to 8 enrolled in the after-school program. (II, III, IV)
Community Health Center (2 Students)	▪ Collect data regarding the utilization rates among elderly Cambodians living in the community in such service areas as transportation, nutrition services, and elder services. (I) ▪ Identify barriers that may exist regarding services, the cultural sensitivity of service providers, and the need for further action. (I) ▪ Design, implement, and evaluate a culturally sensitive time management workshop using multimedia for the 15 Cambodian health educators. (II, III, IV)
University Research Project investigating health disparities among healthcare workers (2 Students)	▪ Plan, market, and evaluate a continuing education workshop for healthcare workers in the area. (II, IV) ▪ Research possible topics for the workshop, recruit a speaker, and work in collaboration with University Marketing and Communication to publicize the event. (I) ▪ Propose appropriate learning activities for the workshop based on materials supplied by the speaker. (II) ▪ Make arrangements with the University Institutional Review Board to provide healthcare workers with Continuing Education Units (CEUs) for their participation. (V) ▪ Design a comprehensive evaluation for the program. (IV)
Rape Crisis Center I (1 Student)	▪ Become trained in facilitating the Child Assault Prevention Program (CAPP). (VI) ▪ Co-present the CAPP program for youngsters attending various elementary schools in the area. (III) ▪ Utilize role play and student participation to enhance the program. (III)
Rape Crisis Center II (1 Student)	▪ Assist the Executive Director in locating appropriate sources of money from granting organizations and foundations. (NA) ▪ Assist in the development of letters of application for funds. (V) ▪ Draft grant proposals with the assistance of the Executive Director. (V, VII)

via the experiences of 12 Service Learning students in five community settings. Specifically, the study aimed to assess the relationship between the students' Service Learning experiences and development of skills in the seven areas of responsibility recommended for entry-level health educators.

Assessment of the service learning projects involved the use of multiple methods and evidence from the three data sources was considered simultaneously in the research process, a technique known as triangulation. First, students' written reflection exercises were gathered through faculty designed "Student Impact Statement" (SIS) assignments. Second, using a Service Learning Perceptions Survey, students' and preceptors' perceptions regarding the acquisition of NCHEC skills were assessed. Third, students' annotated portfolios[6] were evaluated to assess students' proficiency in the NCHEC areas of responsibility for entry-level health educators. Data from the three sources were triangulated to provide a com-

Table 2. Sample Scoring Rubric for Responsibility 3–Implementing Health Education				
Programs	Exemplary 4	Proficient 3	Satisfactory 2	Minimal 1
Evidence of Responsibility #3 Item 1= (Enter item being evaluated)	Demonstrates an ability to creatively and effectively use many diverse methods of communication in the implementation of health education programs.	Demonstrates an ability to effectively use many diverse methods of communication in the implementation of health education programs.	Demonstrates an ability to use only a few methods of in the implementation of health education programs.	Demonstrates an ability to use only one or two methods of communication in the implementation of health education programs.
Score=				
Evidence of Responsibility #3 Item 2= (Enter item being evaluated)	Demonstrates an ability to creatively and effectively use many diverse methods of communication in the implementation of health education programs.	Demonstrates an ability to effectively use many diverse methods of communication in the implementation of health education programs.	Demonstrates an ability to use only a few methods of in the implementation of health education programs.	Demonstrates an ability to use only one or two methods of communication in the implementation of health education programs.
Score=				

prehensive account of the relationship between Service Learning experiences of students and their development of competency in the areas of responsibility.

Student Impact Statements

Students submitted five bimonthly SIS assignments, the first submitted two weeks after the start of the project and biweekly thereafter. In these SIS assignments, three critical areas of inquiry were pursued, including (1) student views on the exposure to and impact on the target population they had during their Service Learning project, (2) student documentation of their progress toward the goals of the project, and (3) students' assessments of the range of skills developed as a direct result of the Service Learning experience. Examples of questions posed in the five SIS assignments include; list and describe the NCHEC skills that you are developing through this project, what impact will this project have on the targeted community, and what are the highlights and lowlights of this project for you?

Service Learning Perceptions Survey

The 50-item Service Learning Perceptions Survey was developed by the researcher to assess the students' and preceptors' perceptions of the students' development in each of the NCHEC areas of responsibility. Figure 1 contains a sample of questions from the Service Learning Perceptions Survey. Content validity for the survey was established through an expert review of the instrument. The two experts reviewing the instrument were proficient in both health education as well as assessment, and their suggestions modified the instrument slightly. The 50-item survey instrument was then pilot tested with an alumni panel of 12 former Service Learning students. The survey was administered twice, with one week between each administration of the survey. Means, standard deviations, and correlations were calculated. In determining test-retest reliability, correlations ranged between a low of 0.79 and a high of 0.95 across the seven areas of responsibil-

ity. Panel participants reported the survey took between 17 and 45 minutes to complete, with an average time of 29 minutes. Overall, alumni reviewers considered the survey instrument clear and comprehensible. Ultimately, the instrument was deemed reliable and valid.

In the present study, all students and preceptors completed the perceptions survey. Respondents to the Service Learning Perceptions Survey were asked to reply to questions that asked them to rate their level of agreement regarding the student's development of competency in each of the seven areas of responsibility. A 1- to 5-point Likert scale was used to gauge perceptions, with 1 representing strong disagreement and 5 representing strong agreement that the project led to the development of competency.

Annotated Portfolios

Each student designed an annotated portfolio[9] as part of the Service Learning course in the target semester. Each annotated portfolio contained students' SIS

Table 3. Sample of SIS data from students and the association to the NCHEC areas of responsibility	
Area of Responsibility	Comment Recorded (Annotated)
I. Assess Needs	...analyzed data from the National College Health Assessment. (Health Service)
	...condensing data from out transportation utilization survey among seniors. (Community Health Center)
II. Plan Programs	.....worked on a playground safety lesson plan. (After-School Program)
	....prepared a program on communication skills and conflict resolution. (After-School program)
III. Implement Programs connected. (Health Service)	...doing a presentation in the residence halls on how stress, alcohol, and sleep deprivation are
	...presented our time management workshop. (Community Health Center)
IV. Evaluate Programs	...as an evaluation, we asked reflective questions. (After-School Program)
	...given me experience evaluating programs, and revising them when necessary. (After-School Program)
V. Coordinate Services	...marketed a professional development workshop for healthcare workers. (Research Project)
	...developed a resource binder for staff at the health center to use when working with elders. It includes information on services in the areas of transportation, healthcare, and nutrition.
VI. Act as a Resource Person	...a reliable resource person for students. (Health Service)
	...hoping that our tracking survey will help to identify ways to improve access to nutrition and transportation services for the elderly in the community. (Community Health Center)
VII. Communicate Health Education Needs, Concerns, and Resources	...wrote a grant proposal to fund our health promotion campaigns. (Health Service)
	...used multiple methods to communicate health information to students, posters, information tables, presentations, and public service announces to name a few. (Health Services)

assignments, as well as documentation of evidence that showcased students' competency in the areas of responsibility developed through their Service Learning experience. Examples of evidence include program plans, public service announcements, grant proposals, and marketing materials. Students also provided text based annotations and photographs that indicated skill development in one or more areas of responsibility, where appropriate.

McKenzie, Cleary, McKenzie, and Stephens[10] suggest the use of an outside panel, consisting of faculty and practicing health education professionals, to conduct the summative evaluation of portfolios designed by students. They also encourage the use of a rubric to guide assessments by multiple reviewers. Both of these methods were employed in the assessment of students' annotated portfolios in this study. The term rubric refers to "a scoring guide used to evaluate the quality of students' constructed responses."[11] A rubric has three essential features: evaluative criteria, quality definitions, and a scoring strategy. The intention of rubrics is to create uniform assessment criteria so that the role of subjective opinions of multiple evaluators would be minimized.[12] In general, the more detailed and constraining a rubric's scoring rules, the greater the likelihood of inter-rater reliability.[11]

Prior to use in the present study, the rubrics were pilot tested and inter-rater reliability was established for the instrument. To determine inter-rater reliability, two health education experts examined four annotated portfolios using the study rubric. Forty-eight pieces of evidence were evaluated in total, and reviewers scoring of the individual artifacts were consistent 95.8% of the time. In the case of two artifacts that were rated differently, a meeting was scheduled to discuss suggestions for improving the rubric. As a result, the instructions for using the scoring rubric were revised to assure a clear understanding among reviewers of their role in evaluating items in the portfolios. A sample rubric for one of the areas of responsibility is shown in Table 2.

Completed portfolios were submitted at the conclusion of the semester. Reviewers were not responsible for issuing any course grades or providing academic consultation to students as a result of their review. Experts on the panel of evaluators were all proficient in and conversant with the NCHEC responsibilities for entry-level health educators.

RESULTS

Student Impact Statements

Upon collection of all SIS assignments, pertinent comments from each of the three critical areas of inquiry were identified. Due to the high volume of data, 50% of the responses (submitted by each student) related to the critical areas of inquiry were utilized for consideration in the present study. Subsequently, key terms and phrases that denoted any particularly strong emotion regarding the Service Learning experience or an overt association between the experience and the NCHEC areas of responsibility were

highlighted. Selected student responses were organized to delineate the Area of Responsibility associated with the comment (if any).

As an example of the SIS data collected in this study, Table 3 offers a sample of comments recorded by students in each of the Service Learning settings. Comments are organized according to the NCHEC area of responsibility most closely related to the comment, as determined by the researcher.

Service Learning Perceptions Survey

All Service Learning Perceptions Survey responses from both students and preceptors were entered into a Microsoft Excel spreadsheet, and scores were tabulated for each student in each area of responsibility. To establish the extent of the students' perceived achievement across all areas of responsibility, the percent of the maximum score (250) reported by students and preceptors over the 50 Perception Survey items was calculated. It was assumed that the higher the total score on the Perceptions Survey, the more strongly the participant perceived that the Service Learning experience led to competency in the NCHEC areas of responsibility. Survey data from students and preceptors is presented in Table 4 to illustrate Perceptions Survey results. As the table indicates, students' scores on the perceptions survey vary across Service Learning projects.

Annotated Portfolios

The assessment rubrics developed by the researcher were employed by the expert panel to evaluate each piece of evidence submitted for each area of responsibility by each student. Mean scores were calculated for each area of responsibility for each student. The following criteria, agreed to by three Community Health Education faculty, were used to evaluate scores reported by the four expert reviewers; mean scores between 3 and 4 were considered exemplary documentation and therefore successful in documenting Service Learning activities leading to proficiency in the area of responsibility, mean scores of 2 were satisfactory representation that the project led to the

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Table 4. Summary of Perceptions Survey Data from 6 service learning sites (12 Students/6 Preceptors)

	Mean Score across 50 Items (Maximum score= 250)	% of Maximum Achieved
Service Learning Site		
University Health Service (3 students + 1 Preceptor)	222	89%
After-school Program (3 students + 1 Preceptor)	215	86%
Community Health Center (2 students + 1 Preceptor)	200	80%
University Research Project (2 students+ 1 Preceptor)	194	78%
Rape Crisis Center I (1 student + 1 Preceptor)	147	59%
Rape Crisis Center II (1 student + 1 Preceptor)	139	56%

Table 5. Sample of annotated portfolio data from the 6 service learning sites (12 Students)

Service Learning Site	Mean Score for students' portfolios across all Areas of Responsibility
University Health Service (3 students)	3.3
After-school Program (3 students)	3.6
Community Health Center (2 students)	3.0
University Research Project (2 students)	2.6
Rape Crisis Center I (1 student)	2.7
Rape Crisis Center II (1 student)	.86

NOTE: A score of 3 to 4 indicate "exemplary" documentation that the project developed competency, a score of 2 indicates "questionable" evidence, and a score of 1 or less indicates "no connection" between the project and the areas of responsibility.

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development of competency, and mean scores of 1 or lower demonstrated no connection between the Service Learning Project and the development of competency. As an example, exemplary evidence, in regard to planning programs (II), would be material that clearly demonstrates the student's mastery in organizing material, setting goals and objectives, and selecting creative learning activities without error. Conversely, evidence that shows no connection to the area of responsibility would show critical errors in the organization of content, setting of goals and objectives, and would not select appropriate activities give the population and setting.

Again, data from the 12 students in the six Service Learning projects is used to illustrate Annotated Portfolio results. Data in Table 5 clearly demonstrate variability in the students' ability to produce high quality evidence indicating their development of skills related to all seven areas of responsibility.

Triangulation

Triangulation of the data from the SIS assignments, perceptions surveys, and annotated portfolios was used to determine the effectiveness of the multiple Service Learning projects implemented in 2002 in developing students' competency in the areas of responsibility identified by NCHEC. Table 6 documents the triangulated study

Table 6. Combined data across 6 service learning projects (12 Students)			
	# of Responsibilities referenced in SIS (Max= 7)	% of Total Attained on Perceptions Survey	Mean Score for evidence provided over all areas of responsibility
University Health Service (3 students)	7	89%	3.3
After-school program (3 students)	4	86%	3.6
Community Health Center (2 students)	4	80%	3.0
University research project (2 students)	3	77%	2.6
Rape Crisis-education program (1 student)	1	59%	2.7
Rape Crisis-grant writing (1 student)	0	55%	.86
Abbreviations: # = Number, % = Percent			

results from the 12 students and six Service Learning projects used in the study.

As indicated, consistent themes across the three data collection methods emerged when considered collectively. The University Health Service, Community Health Center, and After-School Projects were evaluated most highly. Characteristics of these projects included the consistently positive SIS reflections that refer to the areas of responsibility, the consistent agreement regarding perceptions of competency developed as a result of the Service Learning Project, and the successful documentation of evidence that demonstrated competency in all areas of responsibility. The university research project and two rape crisis center projects were evaluated more poorly in relationship to the overall development of competency in the NCHEC areas of responsibility. These projects were characterized as having fewer of the areas of responsibility practiced during the project, less positive comments on SIS assignments, weaker perceptions that the project led to competency, and mean scores on portfolios that did not indicate competency was developed in the areas of responsibility, when compared with the more successful sites.

DISCUSSION

Noteworthy in the first SIS assignment was the students' universal expectation that the experience would be positive and beneficial to their professional development. This replicates the findings of other service learning research studies.[13,14] Anticipation and positive attitudes allowed for great enthusiasm leading up to the students' engagement in the Service Learning Projects.

As the semester unfolded, the experiences dichotomized and students began to perceive differences between Service Learning sites, and in some cases students were becoming dissatisfied that projects were not meeting their initial expectations. Eyler[15] emphasized the importance of participating in ongoing reflective exercises, and specifically addressed the situation where the students' expectations for the Service Learning experience are not met. In this regard, the opportunities for verbal reflection and sharing during seminar sessions were invaluable. These discussions in seminar sessions allowed for honest reflection, while offering opportunities to troubleshoot issues within current projects.

In addition to the outcomes directly related to the NCHEC areas of responsibility, all students were encouraged to extrapolate from the experience what professional skills were honed during their Service Learning Projects, including leadership, organization, empathy, respect, and patience. It is essential not to underestimate and devalue these skills that are not directly associated with the NCHEC areas of responsibility. Much of the Service Learning literature speaks to these important personal and professional skills resulting from participation in Service Learning.[7, 13, 16-23] Therefore, benefits noted as part of the Service Learning course not directly paralleling the NCHEC areas of responsibility were not disregarded or minimized, but valued.

In regard to the three areas of inquiry explored through the SIS assignments, it seemed the stronger Service Learning experiences (university health service, after-school program, and the community health center) provided for frequent and high quality interaction with the target population, clear and significant progress toward predetermined goals, and the report of numerous, tangible skills developed as a direct result of the Service Learning experience. This was not true for the less effective projects (university research and rape crisis center projects).

In the three more effective Service Learning projects, there was consistency among students regarding their perception of competency in the NCHEC areas of responsibility resulting from their project. The 50-question survey detailed the competencies and allowed students the opportunity to specify their perceived development in the multiple areas of competency, framed within the more general areas of responsibility. Students in the less effective projects reported less development in the competencies resulting from their Service Learning project. The survey did ask students to limit their answers to the current Service Learning project when reporting their perception of development in the various competency areas.

The final key piece of information used to determine the effectiveness of Service Learning projects in the training of undergraduate health educators was the assess-

Figure 1. Sample of Questions from the Service Learning Perceptions Survey

Responsibility I: Assessing Individual and Community Needs

Through my Service Learning Project, I developed competency in…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. selecting valid sources of information about health needs and interests.	1	2	3	4	5
2. utilizing computer based sources of health information.	1	2	3	4	5
3. using or developing data gathering instruments.	1	2	3	4	5
4. surveying people to acquire health data.	1	2	3	4	5
5. investigating factors that affect health behaviors (social, physical, emotional, and intellectual).	1	2	3	4	5
6. identifying behaviors that tend to promote or compromise health.	1	2	3	4	5
7. recognizing the role learning plays in shaping patterns of health behavior.	1	2	3	4	5

ment of students' annotated portfolios, a methodology for assessing undergraduate health education students that is well documented in the literature.[10, 24-26] In the more effective Service Learning projects, students were able to produce documents, annotations, or photographs for each area of responsibility that were rated highly among the independent evaluators. Universally, students involved in these more successful projects were able to document evidence of their development in all seven areas of responsibility via their annotated portfolio. Additionally, in these projects, there was a clear consistency of the various data sources used in the study. The students' SIS assignments, perceptions of competence, and documentation of evidence indicated that students had developed professionally in all seven areas of responsibility.

In the remaining Service Learning projects (university research and rape crisis center projects), either questionable documentation was produced, or the student was not able to produce any evidence of competency whatsoever. This inability to produce evidence was consistent with the SIS data and the perceptions survey data. All three sources indicated that these projects were less effective in developing student's competency in the areas of responsibility.

One may speculate why such differences between Service Learning settings existed in the present study. Perhaps differences in student aptitude, a preceptor's academic background, or the size of an organization contribute to the differences observed. The present study has not collected enough data to make a determination, however it is recommended that future study undertake the task of determining characteristics of Service Learning students, projects, and/or settings that are more highly associated with the development of skills in the NCHEC areas of responsibility. This could help to guide the negotiation of Service Learning place-

ments, as well as student preparation for Service Learning experiences in the future.

Driscoll emphasized the importance of creating a comprehensive approach to assessing Service Learning outcomes, and Giles, Honnet, and Migliore[27] spoke to the "scarcity of replicable qualitative and quantitative research on the effects of Service Learning on student learning and development, the communities in which they serve, or on the educational institutions."[28] The assessment strategies utilized in the present study sought to comprehensively evaluate the effects of Service Learning in the preparation of entry-level health educators, as well as to provide opportunities for the replication of the study in other settings.

LIMITATIONS

This report of Service Learning using a triangulated approach to measure effectiveness is limited in various ways. A small sample size, a short timeframe, and limited

Service Learning projects all hinder the outcomes of this study. However, results from this study do indicate that the three assessment strategies are consistent in their evaluation of Service Learning outcomes, based on the NCHEC areas of responsibility. The methods of evaluation utilized in this study will have to be implemented in other, perhaps larger, settings to further determine the value of this approach.

It is also important to note that the idea of "competency" is somewhat relative. Competency is not something that is attainable, but rather something that continues to develop over the course of a career, as educational and professional experiences grow. The term competency applied to an undergraduate health education student is going to differ widely from the competency of a bachelor's prepared student who has been working in the field for five years. Service Learning is a methodology that can help to enhance a students' current level of competency through community-based learning during their undergraduate training.

CONCLUSIONS

As a whole, triangulating data from the SIS assignments, the perceptions survey, and the annotated portfolios proved invaluable in the evaluation of the students' Service Learning experiences. The SIS assignments and perceptions of the development of competency are solid indicators of how well the student will be able to produce evidence of their progress in the seven areas of responsibility articulated by NCHEC. Therefore, assessment and reflection conducted early in the experience and often throughout the experience will provide essential information regarding the students' likelihood of producing evidence of their development of competency. The early assessments faculty can make through students' reflective writing and seminar participation can indicate when a modification to a Service Learning project is required, in order that the student will more likely progress toward the development of competency in the key areas of responsibility identified by NCHEC.

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